NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Raleigh Regional Office
County: Chatham
NC Facility ID: 1900077
Inspector's Name: Stanley Williams
Date of Last Inspection: 02/09/2017
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Triangle Brick Company - Merry Oaks

Facility Address:
Triangle Brick Company - Merry Oaks
294 King Rd
Moncure, NC 27559

SIC: 3251 / Brick And Structural Clay Tile
NAICS: 327121 / Brick and Structural Clay Tile Manufacturing

Facility Classification: Before: Title V **After:**
Fee Classification: Before: Title V **After:**

Permit Applicability (this application only)

SIP: N/A
NSPS: N/A
NESHAP: N/A
PSD: N/A
PSD Avoidance: N/A
NC Toxics: N/A
112(r): N/A
Other: 10/25 tpy HAP limit for MACT avoidance and removal 02D .1109, Case-by-Case requirements for brick facilities

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Buck Reece Director of Manufacturing (919) 387-9258 294 King Road Moncure, NC 27559	Howard Brown, Jr. CEO (919) 544-1796 6523 NC Highway 55 Durham, NC 27713+9413	Howard Brown, Jr. CEO (919) 544-1796 6523 NC Highway 55 Durham, NC 27713+9413

Application Data

Application Number: 1900077.17A
Date Received: 03/28/2017
Application Type: Modification
Application Schedule: TV-Significant

Existing Permit Data
Existing Permit Number: 06897/T10
Existing Permit Issue Date: 08/21/2013
Existing Permit Expiration Date: 07/31/2018

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2016	4.58	9.31	6.12	42.28	47.96	27.17	18.23 [Hydrogen fluoride (hydrofluori]
2015	4.85	9.07	5.29	40.57	25.35	47.57	29.14 [Hydrogen fluoride (hydrofluori]
2014	4.30	8.54	4.99	38.60	24.08	1.71	0.7554 [Hydrogen chloride (hydrochlori]
2013	4.27	8.60	4.66	39.31	24.58	1.68	0.7493 [Hydrogen chloride (hydrochlori]
2012	3.81	7.67	4.15	35.03	21.90	1.39	0.6677 [Hydrogen chloride (hydrochlori]

Review Engineer: Betty Gatano

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 06897/T11
Permit Issue Date:
Permit Expiration Date:

1. Purpose of Application

Triangle Brick Company – Merry Oaks (Triangle Brick) currently holds Title V Permit No. 06897T10 with an expiration date of July 31, 2018 for a brick manufacturing facility in Moncure, Chatham County, North Carolina. On March 28, 2017, the facility submitted a permit application for a significant modification under 15A NCAC 02Q .0516. The facility has requested to become a minor source of hazardous air pollutants (HAPs) by showing that the facility does not emit more than 10 tons per year (tpy) of any single HAP nor more than 25 tpy of all combined HAPs. The following changes to the permit will be made under this modification:

- The facility will take a limit on HAP emissions to become an area or minor source of HAPs.
- Requirements under the 15A NCAC 02D .1109, 112(j) Case-by-Case Maximum Achievable Control Technology (MACT) for Brick Manufacturing (also referred to as the Case-by-Case MACT in this review), will be removed from the permit.

2. Facility Description

As provided in the most recent compliance inspection report,[1] the Merry Oaks Plant makes a variety of bricks, and the materials are mixed, crushed, and fired in the three brick kilns (Kiln ID Nos. K-1, K-2, and K-3) located on site. Kilns 1 and 2 were installed in 1991 and each has a permitted production rate of 14.5 tons/hour. Kiln 3 began operation in 1999 and has a maximum permitted production rate of 29 tons/hour.

Hydrogen fluoride and hydrogen chloride are the largest HAPs emitted from the brick tunnel kilns (ID Nos. K-1, K-2, and K-3). Emissions of these HAPs are controlled a dry lime cascade adsorber (aka DLA) (ID No. CD-K1K2) on kilns 1 and 2 and a separate dry lime cascade adsorber (ID Nos. CD-K3) on kiln 3. Note, operation of the DLA (ID No. CD-K1K2) on kilns 1 and 2 is not required for compliance with the Case-by-Case MACT.

3. Application Chronology

March 28, 2017	Received application for permit modification.
April 3, 2017	Sent acknowledgment letter indicating that the application was complete.
September 20, 2017	Jenny Sheppard requested an updated D1 Form that included criteria pollutants.
October 12, 2017	Updated D1 Form and updated HAP emission calculations were received from Michael Cantoni, consultant for Triangle Brick.
October 31, 2017	Permit application reassigned to Betty Gatano, who was also assigned the permit application for the Triangle Brick – Wadesboro (0400043.17A). Because these permit applications were similar, the same engineer was assigned both applications for efficiency.
November 6, 2017	A second revision to the D1 Form and HAP emission calculations were received from Beth Barfield, consultant for Triangle Brick. The calculations

[1] Stanley Williams (02/09/2017).

	were updated to reflect the most conservative approach to estimating potential emissions from the brick kilns.
November 8, 2017	Ms. Barfield confirmed the small gasoline tank (ID No. IS-Tank6) was installed at the facility and the amount of fuel used is much less than 10,000 gallons per month. This tank will become subject to GACT Subpart 6C after the facility becomes an area source of HAPs.
November 8, 2017	Draft permit and permit review forwarded for review.
November 8, 2017	Mark Cuilla, Permitting Supervisor, provided comments.
November 17, 2017	Charles McEachern from the Raleigh Regional Office (RRO) provided comments on the draft permit.
November 20, 2017	William Willets (Permitting Chief), Michael Pjetraj (Deputy Director of DAQ), and Mike Abraczinskas (DAQ Director) met with Charles McEachern and Betty Gatano to discuss removing requirements under the Case-by-Case MACT from the permit. The following items were requested for this permit application: • The HAP avoidance condition was to be revised to state that the DLAs on the kilns must be operated at all times except during periods of startup, shutdown, malfunction, and routine maintenance. • An acknowledgment was needed from the responsible official indicating he understood that EPA could object to removing the requirements under the Case-by-Case MACT from the permit.
November 22, 2017	Ms. Gatano forwarded the revised HAP avoidance condition to the facility and to DAQ staff. Mr. McEachern and Mr. Willets replied that same day and indicated the changes were acceptable.
November 23, 2017	Ms. Gatano called Howard Brown, CEO of Triangle Brick and responsible official to discuss removing the requirements under the Case-by-Case MACT. Ms. Gatano explained the EPA has a "Once-In-Always-In" policy meaning that once a facility is subject to a NESHAP rule the applicability is permanent after the compliance date. Ms. Gatano stated the DAQ is uncertain what actions the EPA may take if the requirements under Case-by-Case MACT were removed from the permit. Mr. Brown indicated he was aware of the risk and requested to move forward with the permit application.
November 27, 2017	Ms. Barfield indicated the facility approved of the revised HAP avoidance condition.
November 29, 2017	Draft permit and permit review forwarded to public notice.

4. Permit Modifications/Changes and TVEE Discussion

The table below list changes to the current permit under this modification.

Pages	Section	Description of Changes
Cover and throughout	-	• Updated all dates and permit revision numbers. • Changed the term "State Only Requirements" to "State-Enforceable Only"
Cover letter-	--	Added PSD status of the facility to the cover letter.
Insignificant Activities List	--	Added the GACT CCCCCC label to the gasoline storage tank (ID No. IS-Tank6).
3	1.0 Equipment List	• Removed reference to 15A NCAC 02D .1109, Case-by-Case MACT for the brick tunnel kilns (ID Nos. K-1, K-2, and K-3). These requirements are being removed under this permit modification. • Removed asterisks and associated footnote stating the dry lime cascade adsorber (ID No. CD-K1K2) is not required for compliance with 15A NCAC 02D .1109, Case-by-Case MACT.
14	2.1 C – Regulations Table	• Removed reference to 15A NCAC 02D .1109, Case-by-Case MACT. These requirements are being removed under this permit modification. • Added reference to 15A NCAC 02D .0317 for avoidance of 02D .1111, MACT. • Removed reference to 15A NCAC 2Q .0705, Existing Sources and SIC Calls. This rule was repealed on May 1, 2014.
--	2.1 C.6	Removed permit condition for 15A NCAC 02D .1109, Case-by-Case MACT for Brick Manufacturing. These requirements are being removed under this permit modification because the Permittee is accepting avoidance limits to become an area source of HAPs.
18	2.1 C.6	Added a permit condition for 15A NCAC 02D .0317 for avoidance of 02D .1111, MACT.
23	2.2 A – Regulations Table	Removed reference to 15A NCAC 2Q .0705, Existing Sources and SIC Calls. This rule was repealed on May 1, 2014.
23	2.2 A.2	Removed reference to 15A NCAC 2Q .0705, Existing Sources and SIC Calls. This rule was repealed on May 1, 2014.
25 – 33	Section 3	Updated the General Conditions to the most recent revision (V5.1: 08/03/2017).
34	Attachment	Updated the list of acronyms.

The Title V Equipment Editor was updated to remove reference to 02D .1109, Case-by-Case MACT from the description of the brick tunnel kilns (ID Nos. K-1, K-2, and K-3).

5. Background

In 1995 the U.S. Environmental Protection Agency (EPA) issued a policy memorandum commonly referred to as "Once-In-Always-In."[2] The policy provides that a source can avoid the applicability of an otherwise applicable MACT standard only if the source reduces its potential to emit before the first substantive compliance date of the MACT. The EPA acknowledged at that time that it intended to "follow this guidance memorandum with rulemaking actions to address these issues. The Agency intends to include provisions on potential to emit timing in future MACT rules and amendments to the section 112 general provisions." To date, with limited exception, the EPA has not initiated rulemaking to codify the interpretations contained in the memorandum. Consequently, the "Once-In-Always-In" policy has been inconsistently applied among States and Local agencies, as well as EPA Regional Offices.[3]

In an e-mail dated December 1, 2014, John Evans, the General Counsel for the NC Department of Environmental and Natural Resources at that time, advised against following the "Once-In-Always-In" policy. The e-mail stated, "I would recommend that we follow the law and regulation as currently drafted, [which] do not include any temporal restriction on the definition of a Title III major source. In addition to the environmental benefit of relying on the regulation and not the policy, our application of the Title III definition of major source would be consistent with the definition of major source under Title V which has never included a policy-based once-in-always-in provision."

On the advice of the NCDAQ General Counsel, the DAQ will allow facilities, on a case-by-case basis and with approval from the DAQ Director, to avoid MACT applicability after the first substantial compliance date provided HAP emissions remain below major source levels. The DAQ Director reviewed Triangle Brick's request and observed that the facility can maintain emissions of HAPs below major source levels using DLAs for control of its kilns. The DAQ Director will allow the facility to avoid applicability of the Case-by-Case MACT. Triangle Brick will no longer be subject to the Case-by-Case MACT upon the issuance of Air Permit No. 06987T11 with a federally enforceable avoidance condition for HAPs. Triangle Brick will also avoid the NESHAP for Brick and Structural Clay Products Manufacturing, 40 CFR 63 Subpart JJJJJ (also referred to as the Brick MACT), which has compliance date of December 26, 2018 for existing sources.

6. Limitation to Avoid MACT

Triangle Brick is requesting an avoidance limit in accordance with 02Q .0317(a)(4) to restrict its potential to emit to less than 10 tpy for an individual HAP and 25 tpy for all combined HAPs on a facility-wide basis. These limitations will establish this facility as an area or minor source of HAPs. Consequently, Triangle Brick will no longer be subject to the Case-by-Case MACT. This condition will be removed from the permit under this modification and will be replaced with a MACT avoidance condition. With this federally enforceable avoidance condition, Triangle Brick will also avoid the Brick MACT, which has compliance date of December 26, 2018 for existing sources, as noted above. The permit condition for MACT avoidance is provided in Attachment 1 to this review.

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[2] Potential to Emit for MACT Standards – Guidance on Timing Issues; May 16, 1995 https://www.epa.gov/sites/production/files/2015-08/documents/pteguid.pdf.

[3] NCDAQ's comment letter on USEPA's Evaluation of Existing Regulations, May 15, 2017 https://files.nc.gov/ncdeq/Air%20Quality/rules/letters/2017%2005%2015%20EPA%20Docket%202017-0190%20Evaluation%20of%20Existing%20Regulations.pdf

Emissions from Brick Tunnel Kilns (ID Nos.K-1, K-2, and K-3)

The facility's status as an area source of HAPs is justified based on the most recent source testing of the kilns. Triangle Brick conducted emission testing of brick tunnel kiln (ID No. K-3) on September 12, 2016 for filterable particulate matter (PM), hydrogen fluoride (HF) and hydrogen chloride (HCl) as required by the Case-by-Case MACT. The kiln was retested on February 9, 2017 because the kiln failed to meet the limit for filterable PM emission limit during the 2016 testing. Kiln K-3 is a natural gas/No. 2 fuel oil/ No. 6 fuel oil-fired brick tunnel kiln controlled by a DLA (ID No. CD-K3). The kiln fired natural gas during testing. The results of the testing are provided in the table below.

Pollutant	Test Results	Limit	Standard	Compliance
Test Date: September 12, 2016				
Filterable PM	0.42 lb/ton	0.17 lb/ton	2D .1109	**No**
Hydrogen Chloride	0.060 lb/hr	---	---	---
Hydrogen Fluoride	0.352 lb/hr	---	---	---
HCl equivalent	0.563 lb/hr	21.19 lb/hr (K-1, K-2, and K-3 combined)	2D .1109	Yes
Process Rate	25.17 ton/hr	29.0 ton/hr	---	---
Test Date: February 9, 2017				
Filterable PM	0.16 lb/ton	0.17 lb/ton	2D .1109	Yes
Hydrogen Chloride	0.13 lb/hr	---	---	---
Hydrogen Fluoride	0.21 lb/hr	---	---	---
HCl equivalent	0.42 lb/hr	21.19 lb/hr (K-1, K-2, and K-3 combined)	2D .1109	Yes
Process Rate	25.17 ton/hr	29.0 ton/hr	---	---

Notes:

- The results of the September 12, 2016 testing were reviewed by Shannon Vogel of the Stationary Source Compliance Branch (SSCB) and approved in a memorandum dated January 20, 2017
- The results of the February 9, 2017 testing were reviewed by Shannon Vogel of the SSC and approved in a memorandum dated April 24, 2017.

The test results were also used to establish emission factors for HF and HCl. Emissions of other HAPs from the kiln were based on EPA's AP-42 Section 11.3 "Brick and Structural Clay Products." Combustion of fuel oil in the kilns was also accounted for in the emissions. Emissions from combustion of fuel oil were determined from DAQ's "Fuel Oil Combustion Emissions Calculator Revision G" (11/5/2012) or EPA's AP-42 Section 1.3 "Fuel Oil Combustion," where no emission factors in DAQ's spreadsheet were available.

Maximum emissions were developed for each of the three operating scenarios for the kilns - 1) firing natural gas only; 2) firing distillate oil; 3) firing residual oil and natural gas. The amount of brick produced attributable to natural gas and fuel oil in the third scenario was determined from Prevention of Significant Deterioration (PSD) avoidance limits in the permit, and the maximum emissions from the kilns were based on the apportioned production rate. Potential emissions were determined as the highest emissions among the operating scenarios on a pollutant specific basis. Example calculations for several HAPs from kiln 1 are provided in Attachment 2 to this review. The potential emissions of HAPs are provided in the table below. As shown in the table, facility-wide potential emissions of all HAPs are 9.39 tons per year, and the highest potential emissions of any HAP is hydrogen fluoride at 3.99 tons per year.

Pollutant	NC TAP &/or HAP	Potential Emissions (lb/yr)	Potential Emissions (tpy)
1,1,1 Trichloroethane	TAP/HAP	3.65	1.83E-03
1,4 Dichlorobenzene	TAP/HAP	24.39	1.22E-02
2-Butanone (MEK)	TAP/HAP	111.78	5.59E-02
2-Hexanone (MIBK)	TAP/HAP	43.19	2.16E-02
Acetaldehyde	TAP/HAP	0.01	5.55E-06
Acrolein	TAP/HAP	0.01	6.58E-06
Antimony	HAP	21.17	1.06E-02
Arsenic	TAP/HAP	18.75	9.38E-03
Benzene	TAP/HAP	1,488.17	7.44E-01
Beryllium	TAP/HAP	2.46	1.23E-03
Benzo(a)pyrene	HAP/TAP	3.06E-06	1.53E-09
Bis (2-ethylhexyl) Phthalate	HAP	1,016.16	5.08E-01
Cadmium	TAP/HAP	9.87	4.94E-03
Carbon Disulfide	TAP/HAP	21.85	1.09E-02
Chlorine	TAP/HAP	660.50	3.30E-01
Chloroethane	HAP	289.61	1.45E-01
Chloromethane	HAP	340.41	1.70E-01
Chrome VI	TAP/HAP	1.33	6.66E-04
Chromium	HAP	28.16	1.41E-02
Cobalt	HAP	9.62	4.81E-03
Di Butyl Phthalate	HAP	71.13	3.56E-02
Ethyl Benzene	HAP	26.73	1.34E-02
Formaldehyde	TAP/HAP	311.89	1.56E-01
n-Hexane	TAP/HAP	4.59	2.30E-03
Hydrogen Chloride	TAP/HAP	5,042.02	2.52E+00
Hydrogen Fluoride	**TAP/HAP**	**7,989.65**	**3.99E+00**
Iodomethane	HAP	47.25	2.36E-02
Lead	HAP	82.96	4.15E-02
Manganese	TAP/HAP	151.84	7.59E-02
Mercury	TAP/HAP	6.06	3.03E-03
Naphthalene	HAP	34.81	1.74E-02
Nickel	TAP/HAP	156.57	7.83E-02
Phenol	TAP/HAP	43.69	2.18E-02
Selenium	HAP	128.11	6.41E-02
Styrene	TAP/HAP	10.16	5.08E-03
Tetrachloroethene	TAP/HAP	1.42	7.11E-04
Toluene	TAP/HAP	508.18	2.54E-01
Xylene	TAP/HAP	71.01	3.55E-02
Total HAP Emissions	**--**	**18,779.18**	**9.39**

Pollutant	NC TAP &/or HAP	Potential Emissions (lb/yr)	Potential Emissions (tpy)
Notes: • Potential HAP emissions include emissions from the three brick tunnel kilns (ID Nos. K-1, K-2, and K-3) and the rotary coating dryer (ID No. SD-1). • As a conservative estimate, potential emissions from the kilns were determined as the maximum emissions on a pollutant specific basis for each of three operating scenarios (natural gas only, distillate only, and residual up to the 250 tpy threshold for SO_2 and natural gas for the rest of the production). • The amount of No. 6 fuel oil fired in brick tunnel Kilns (ID Nos. K-1, K-2, and K-3) was based a 250 ton per year sulfur dioxide emission limit in accordance with PSD avoidance in Section 2.1 C.4 of the permit. • Emission factors for HCl and HF as measured in the February 2017 testing were doubled as a conservative estimate.			

Potential emissions for HF and HCl as shown in the table above were based on controlled emission factors from testing while operating the DLA. The current permit indicates the DLA (ID Nos. CD-K1K2) on kilns 1 and 2 (ID Nos. K-1 and K-2) is not required for compliance 02D .1109. The current permit also allows kiln 3 (ID No. K-3) to operate up to 4% of the annual operating time in bypass mode without concurrent operation of the DLA (ID No. CD-3). (See Section 2.1 C.6.b.iii of Air Permit No. 06987T10.) Because operation of DLAs is required for HAP avoidance, Triangle Brick will not be allowed to operate kilns without the simultaneous operation of the DLAs, and periods of operation without the DLAs must be accounted for in the emission calculations. The HAP avoidance condition will specify emissions of HF and HCl must be based on uncontrolled emissions factors. Triangle Brick used the following emission factors in this permit application to calculate the uncontrolled emissions of HF and HCl from the kilns:

Pollutant	Emission Factor	Reference
Hydrogen Chloride	1.7E-01 lb/ton	Uncontrolled emission factor for HCl based on AP-42 Section 11.3 "Brick and Structural Clay Products," Final Report 1997.
Hydrogen Fluoride	2.8E-01 lb/ton	Uncontrolled emission factor for HF based on source test completed October 1995.

Regulatory Review

The brick tunnel kilns (ID Nos. K-1, K-2, and K-3) at Triangle Brick will be subject to following regulations after modification:

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes
- 15A NCAC 02D .0516, Sulfur Dioxide Emissions from Combustion Sources
- 15A NCAC 02D .0521, Control of Visible Emissions
- 15A NCAC 02D .1100, Control of Air Toxics
- 15A NCAC 02D .1806, Control and Prohibition of Odorous Emissions
- 15A NCAC 02Q .0317, Avoidance Conditions – The facility will accept avoidance conditions for the following regulations:
  - 15A NCAC 02D .1111, MACT, and the NESHAP for Brick and Structural Clay Products Manufacturing, 40 CFR 63 Subpart JJJJJ
  - 15A NCAC 02D .0530, PSD
- 15A NCAC 02Q .0711, Emission Rates Requiring a Permit

Except for the avoidance condition for HAPs, no changes to permit conditions for these regulations are required under this modification. Continued compliance is anticipated.

7. NSPS, NESHAPS/MACT, NSR/PSD, 112(r), CAM

NSPS

Triangle Brick is subject to the following New Source Performance Standards (NSPS).

NSPS OOO

The crushing, grinding, and conveying equipment at Triangle Brick are subject to "Standards of Performance for Nonmetallic Mineral Processing Plants," 40 CFR 60 Subpart OOO. This permit modification does not affect the facility's status with respect to this NSPS, and no changes to the permit are needed. Continued compliance is anticipated.

NSPS UUU

The natural gas-fired rotary coatings dryer (ID No. SD-1) is subject to "Standards of Performance for Calciners and Dryers in Mineral Industries," 40 CFR 60 Subpart UUU. This permit modification does not affect the facility's status with respect to this NSPS, and no changes to the permit are needed. Continued compliance is anticipated.

MACT

Under this permit modification, the facility is requesting a facility-wide emission limit for HAPs. The permit will limit emissions of any single HAP to less than 10 tpy and to less than 25 tpy for any combination of HAPs. These limitations establish this facility as an area source of HAPs. Triangle Brick will no longer be subject to the Case-by-Case MACT and will avoid applicability to the Brick MACT, as discussed above in Section 6. Compliance with the avoidance limit is anticipated.

The permit for Triangle Brick includes a 3,000 gallon above ground gasoline storage tank (ID No. IS-Tank6), which is on the insignificant activities list. When the facility becomes an area source of HAPs, the tank will become subject to the "NESHAP for Gasoline Dispensing Facilities (GDF)," 40 CFR 63 Subpart CCCCCC (GACT Subpart 6C). This regulation applies to GDF located at area sources of HAPs, and requirements are determined based on the throughput of gasoline. Triangle Brick uses less than 10,000 gallons of gasoline per month and must comply with requirements under 40 CFR 63.11116, as provided below:

40 CFR 63.11116

(a) You must not allow gasoline to be handled in a manner that would result in vapor releases to the atmosphere for extended periods of time. Measures to be taken include, but are not limited to, the following:
  (1) Minimize gasoline spills;
  (2) Clean up spills as expeditiously as practicable;
  (3) Cover all open gasoline containers and all gasoline storage tank fill-pipes with a gasketed seal when not in use;
  (4) Minimize gasoline sent to open waste collection systems that collect and transport gasoline to reclamation and recycling devices, such as oil/water separators.

(b) You are not required to submit notifications or reports as specified in §63.11125, §63.11126, or subpart A of this part, but you must have records available within 24 hours of a request by the Administrator to document your gasoline throughput.

(c) You must comply with the requirements of this subpart by the applicable dates specified in §63.11113.
(d) Portable gasoline containers that meet the requirements of 40 CFR part 59, subpart F, are considered acceptable for compliance with paragraph (a)(3) of this section.

The tank will remain on the insignificant activities list because it meets the definition under 15A NCAC 02Q .0503(8). Compliance with GACT Subpart 6C is anticipated.

PSD

Triangle Brick is a minor source under the PSD permitting program, with a 250 ton per year avoidance limits for sulfur dioxide emissions from the three brick tunnel kilns. This permit modification does not affect the facility's status with respect to PSD, and no changes to the permit are needed. Continued compliance is anticipated.

112(r)

The facility is not subject to Section 112(r) of the Clean Air Act requirements because it does not store any of the regulated substances in quantities above the thresholds in 112(r). This permit modification does not affect the 112(r) status of the facility.

CAM

40 CFR Part 64, Compliance Assurance Monitoring (CAM), is applicable to any pollutant-specific emission unit (PSEU), if the following three conditions are met:

- the unit is subject to any (non-exempt: e.g. pre-November 15, 1990, Section 111 or Section 112 standard) emission limitation or standard for the applicable regulated pollutant.
- the unit uses any control device to achieve compliance with any such emission limitation or standard.
- unit's precontrol potential emission rate exceeds either 100 tons/yr (for criteria pollutants) or 10/25 tons/yr (for HAPs).

The DLAs (ID Nos. CD-K1K2 and CD-K3) on the brick tunnel kilns (ID Nos. K-1, K-2, and K-3) are not used for compliance with any federally enforceable regulation other than the 02D .1109, 112(j) Case-by-Case MACT for brick facilities. With acceptance of the HAP avoidance limits, Triangle Brick is no longer subject to the Case-by-Case MACT or the upcoming Brick MACT. However, the DLAs are required for the HAP avoidance limit. As specified in 15A NCAC 02D .0614(b)(1)(E), CAM does not apply to an emissions cap that is approved under the 15A NCAC 02D .0614 and 15A NCAC 02Q and incorporated in a permit issued under 15A NCAC 02Q .0500. The federally enforceable avoidance limits for HAPs, which will be added to the permit under this modification, are these types of emission caps. Therefore, the brick tunnel kilns and associated DLAs are not subject to CAM.

8. Facility Wide Air Toxics

Triangle Brick submitted air modeling in 1997 to demonstrate compliance with NC Air Toxics under 15A NCAC 02D .1100, Control of Toxic Air Pollutants, for the installation of kiln 3. The current permit limits emissions for numerous toxic air pollutants, including HF and HCl, based on the 1997 modeling. The permit contains no monitoring, recordkeeping, or reporting requirements for compliance with the emission limits. Other than removing references to 15A 02Q .0705 (which has been repealed), no changes to the permit are required under this modification, and continued compliance is anticipated as shown in the table below based on recent testing of kiln 3.

Emission Source	HCl		HF	
	Permitted Limit	Test Results	Permitted Limit	Test Results
Test Date: September 12, 2016				
Kiln 1	155.44 lb/hr	--	41.21 lb/hr 878.11 lb/day	--
Kiln 2		--		--
Kiln 3		0.060 lb/hr		0.352 lb/hr 8.4 lb/day
Test Date: February 9, 2017				
Kiln 1	155.44 lb/hr	--	41.21 lb/hr 878.11 lb/day	--
Kiln 2		--		--
Kiln 3		0.13 lb/hr		0.21 lb/hr 4.94 lb/day

9. Facility Wide Emissions Review

Facility-wide potential emissions are provided in table below. Actual emissions from 2012 to 2016 are provided in the header of this permit review.

Pollutant	Potential Emissions with Controls/Limits (tons/yr)
PM	77.79
PM_{10}	68.07
$PM_{2.5}$	63.24
SO_2	<250
NO_X	85.57
CO	160.0
VOC	15.0
Largest HAP (HF)	4.0
Total HAPs	9.4
Notes: Facility-wide emissions for the criteria pollutants were provided in an updated D1 Form received via e-mail on November 6, 2017.	

10. Compliance Status

Stanley Williams of the RRO conducted the most recent inspection at Triangle Brick on February 9, 2017. The facility appeared to be compliance during the inspection, with the exception of the 15A NCAC 02D .1109. The facility had failed a source test on September 12, 2016 and was unable to demonstrate compliance with 02D .1109. The inspection was conducted in conjunction with the retest, and the facility was able to demonstrate compliance during the retest. Additionally, a signed Title V Compliance Certification (Form E5) indicating the facility was in compliance with all applicable requirements was included with the application for permit modification.

Five-year compliance history

- A Notice of Violation (NOV) was issued on May 12, 2017 for a failed stack test. Triangle Brick conducted stack testing on kiln 3 on September 12, 2016 to demonstration compliance with 15A NCAC 02D .1109, Case-by-MACT for brick facilities. Compliance with the filterable PM

emission limit was not demonstrated. After corrective actions were taken on the dry lime adsborber, Triangle Brick retested kiln 3 on February 9, 2017, and compliance was demonstrated.

- A Notice of Deficiency (NOD) was issued to Triangle Brick on May 31, 2017 for a late report. The compliance issue was resolved with the submittal of the late report.

The NOVs and NODs have been resolved.

11. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 02Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Consistent with 15A NCAC 02Q .0525, the EPA will have a concurrent 45-day review period. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 02Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA. Also pursuant to 02Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 02Q .0521 above. No state or local agency are within 50 miles of the facility.

12. Other Regulatory Considerations

- A P.E. seal is NOT required for this application.
- A zoning consistency is NOT required for this application.
- A permit fee of $929 is required and was submitted with the permit application.

13. Recommendations

The permit modification application for Triangle Brick Company – Merry Oaks located in Moncure, Chatham County, NC has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. The DAQ recommends the issuance of Air Permit No. 06897T11.

Attachment 1
Permit Condition for MACT Avoidance

6. 15A NCAC 02Q. 0317: AVOIDANCE CONDITIONS for 15A NCAC 02D .1111: MAXIMUM ACHEIVABLE CONTROL TECHNOLOGY

a. In order to remain classified a minor source for hazardous air pollutants and avoid applicability of this regulation, facility emissions shall be less than:
   i. 10 tons per year of each hazardous air pollutant, and
   ii. 25 tons per year of all hazardous air pollutants combined.

   The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if the hazardous air pollutants (HAP) emissions exceed this limit.

Monitoring/Recordkeeping Requirements [15A NCAC 02Q .0508(f)]

b. The Permittee shall operate the DLAs **(ID Nos. CD-K1K2 and CD-K3)** at all times the brick tunnel kilns **(ID Nos. K-1, K-2, and K-3)** are in operation, except during periods of startup, shutdown, or malfunction or during operation in bypass mode for routine maintenance of the DLAs **(ID Nos. CD-K1K2 and CD-K3)**.
c. The Permittee shall maintain an adequate amount of limestone in the limestone hopper, storage bin (located at the top of the DLA), and DLAs **(ID Nos. CD-K1K2 and CD-K3)** at all times.
   i. Once per day, the Permittee shall verify that the limestone hopper and storage bin at the DLAs **(ID Nos. CD-K1K2 and CD-K3)** contain adequate limestone and record the results.
   ii. The record of the daily check shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request.

   The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if these monitoring and recordkeeping requirements are not met or if the Permittee does not maintain an adequate amount of limestone as provided above.
d. The Permittee shall use the same grade of limestone at the DLAs **(ID Nos. CD-K1K2 and CD-K3)** from the same source as was used during the performance test. The Permittee shall maintain records of the source and grade of limestone used. The records shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if these records are not maintained.
e. The Permittee shall maintain the limestone feeder settings at the DLAs **(ID Nos. CD-K1K2 and CD-K3)** at or above the level established during the performance test.
   i. Once per day, the Permittee shall check and record the limestone feeder setting to verify that it is being maintained at or above the level established during the performance test.
   ii. The record of the daily check shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request.

   The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if these monitoring and recordkeeping requirements are not met or if the Permittee does not maintain the limestone feeder setting as provided above.
f. Once per calendar month, the Permittee shall ensure that the limestone feed system on the DLAs **(ID Nos. CD-K1K2 and CD-K3)** replaces limestone at least as frequently as the schedule set during the performance test. The Permittee shall create and maintain a record of the monthly check in a logbook (written or electronic format) on-site and shall make the records available to an authorized representative upon request. The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if this requirement is not met.
g. The Permittee shall monitor the bypass damper position for the DLAs **(ID Nos. CD-K1K2 and CD-K3)** at the brick tunnel kilns **(ID Nos. K-1, K-2, and K-3)** as follows:
   i. The Permittee shall secure the bypass damper in a closed and locked position.
   ii. The Permittee shall conduct a visual inspection of the bypass damper once per day to ensure that the damper is maintained in a closed and locked position.
   iii. If the lock has been broken or if the damper position has changed, except for periods of routine maintenance as specified in Section 2.1 C.6.h below, the Permittee shall monitor and record the bypass damper position at least every 15 minutes for the DLAs **(ID Nos. CD-K1K2 and CD-K3)** until the bypass damper has been returned to a closed and locked position.
   iv. The Permittee shall record the total time the kilns were operated in bypass mode.
   v. The record of the monitoring shall be maintained in a logbook (written or electronic format) on-site

and made available to an authorized representative upon request.

The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if these monitoring and recordkeeping requirements are not met.

h. The Permittee shall maintain a record of each period when the brick tunnel kilns **(ID Nos. K-1, K-2, and K-3)** are operated while bypassing the DLAs **(ID Nos. CD-K1K2 and CD-K3)** in order to perform routine maintenance. The records shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request, and shall include:
   i. The start date and start time of the routine maintenance;
   ii. The stop date and stop time of the routine maintenance;
   iii. A description of the maintenance activities; and,
   iv. The total time the kilns have operated in bypass mode during periods of routine maintenance.

   The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if these records are not maintained.

i. The Permittee shall maintain a record of each period when the brick tunnel kilns **(ID Nos. K-1, K-2, and K-3)** are operated without the DLAs **(ID Nos. CD-K1K2 and CD-K3)** during periods of startup, shutdown, or malfunction (SSM)**.** The records shall be maintained in a logbook (written or electronic format) on-site and made available to an authorized representative upon request, and shall include:
   i. The start date and start time of the SSM event;
   ii. The stop date and stop time of the SSM event; and
   iii. The total time the kilns have operated without the DLA during the SSM event.

   The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if these records are not maintained.

j. The Permittee shall maintain records of the production rates on a fired-product basis and HAP emissions for each brick tunnel kiln **(ID Nos. K-1, K-2, and K-3)**. The Permittee shall maintain monthly records as follows:
   i. The Permittee shall record the quantity of bricks produced from each brick tunnel kiln each month and for the 12-month period ending on that month.
   ii. The Permittee shall determine the total time the kilns were operated in bypass mode each month and for the 12-month period ending on that month.
   iii. The Permittee shall calculate HAP emissions in pounds each month and for the 12-month period ending on that month. Emissions of HF and HCl when the kilns are operated in bypass mode or when the DLAs **(ID Nos. CD-K1K2 and CD-K3)** are not in operation during SSM events must be based on uncontrolled emissions factors.

   The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if the brick production or the HAP emissions are not calculated or the records are not maintained**.**

k. The Permittee shall keep a record of the applicability determination (request for minor HAP source status) on site at the source for a period of five years after the determination, or until the source becomes an affected source. The determination must include the analysis demonstrating why the Permittee believes the source is unaffected pursuant to 40 CFR Part 63.10(b)(3). The Permittee shall be deemed in noncompliance with 15A NCAC 02D .1111 if the records are not maintained.

Reporting Requirements [15A NCAC 02Q .0508(f)]

l. The Permittee shall submit a summary report of monitoring and recordkeeping activities given in Sections 2.1 C.6.b through k above postmarked on or before January 30 of each calendar year for the preceding six-month period between July and December and July 30 of each calendar year for the preceding six-month period between January and June. The report shall contain the following:
   i. greatest quantity in pounds of an individual hazardous air pollutant emitted:
      (A) for each month during the semiannual period, and
      (B) for each 12-month period ending on each month during the semiannual period using a 12-month rolling total;
   ii. pounds of all hazardous air pollutants emitted:
      (A) for each month during the semiannual period, and
      (B) for each 12-month period ending on each month during the semiannual period using a 12-month rolling total.
   iii. All instances of deviations from the requirements of this permit must be clearly identified.

Attachment 2

Example Calculations of Emissions from Brick Tunnel Kiln 1 (ID No. K-1) for Selected HAPs

Production Data for Kiln 1:

Triangle Brick Company - Merry Oaks Plant

Potential Usage

Potential Heat Inputs

Emission Source ID No.	Rated Capacity (MMBtu/hr)	Allowable Operating Hours (hrs/yr)	Potential Heat Input (MMBtu/yr)	Maximum Brick Production (ton/hr)	Potential Production (tons/yr)
K-1	21.4	8,760	187,464	14.5	127,020
K-2	21.4	8,760	187,464	14.5	127,020
K-3	42.8	8,760	374,928	29	254,040
SD-1	0.3	8,760	2,628	NA	

Fuel Type	Heat Content	Units
Natural gas	1,030	Btu/scf
Distillate (No. 2 fuel oil)	140,000	Btu/gal
Residual (No. 6 fuel oil)	150,000	Btu/gal

Determining Oil Usage based on 250 tpy SO_2 PSD Avoidance Limit		
Scenario 1: All natural gas		
Brick production EF (lb SO_2/ton brick)	0.0627	
SO_2 from brick production (tpy)	15.93	Based on all kilns
SO_2 from SD-1 (tpy)	7.65E-06	NG Combustion
Total SO2 from firing NG	15.93	
Remaining SO2 emissions for oil firing (tpy)	234.07	PSD avoidance limit at 250 tpy: Remaining SO2 emissions = 250-15.93 tpy
Scenario 2: Maximize distillate oil		
EF assuming 0.5% s (lb SO_2/ 10^3 gals)	71	US EPA AP-42, Table 1.3-1 for Distillate oil
Max allowable gallons of distillate oil (10^3 gal)	6593.57	Based on remaining SO2 emissions for oil firing
Max allowable heat input (MMBtu/yr) to stay under SO_2 limit	923,100	Distillate oil (gal)* heat content (Btu/gal)
Max possible heat input (MMBtu/yr)	749,856	For all three kilns
Ratio of allowable/possible	1.23	Therefore 250 tpy limit does not limit distillate oil firing (assume continuous)
Scenario 3: Maximize residual oil		
EF assuming 2.1% s (lb SO_2/ 10^3 gals)	329.7	US EPA AP-42, Table 1.3-1 for Residual oil
Max allowable gallons of residual oil (10^3 gal)	1419.91	Based on remaining SO2 emissions for oil firing
Max allowable residual (MMBtu/yr) to stay under SO_2 limit	212,986	Residual Oil (gal)* heat content (Btu/gal)
Max possible heat input (MMBtu/yr)	749,856	For all three kilns
Ratio of allowable/possible	0.28	Therefore 0.28 of max kiln heat input can come from residual oil. It will be assumed that the rest of the brick is made with the kilns firing natural gas.

Annual Production Data for Kiln 1			
Tons of Fired Brick Produced	127,020	tons	
Cubic Feet Natural Gas Combusted	182,003,883	ft^3	Based on heat input of 187,644 MMBtu/yr for Kiln 1
Gallons Distillate Oil Combusted	1,339,029	gallons	As worse case, assume heat input of Kiln 1 due to distillate oil.
Gallons Residual Oil Combusted	354,977	gallons	0.28 * heat input of Kiln 1 assumed heat input attributable to residual oil

Selected HAP Emissions Calculation for Kiln 1:

Pollutant	Primary Operating Scenario		Secondary Operating Scenario					Tertiary Operating Scenario					Emissions Summary	
	Clay Firing (Nat. Gas)		Clay Firing (Nat. Gas)		Distillate Fuel Combustion[5,6,7]		Total	Clay Firing (Nat. Gas)		Residual Fuel Combustion[5,6,8]		Total		
	Emission Factor (lbs/ton)	Potential Emission Rate (lbs/yr)	Emission Factor (lbs/ton)	Potential Emission Rate (lbs/yr)	Emission Factor (lb/1000 gallon)	Potential Emission Rate (lbs/yr)	Oper. Scen. Emissions (lbs/yr)	Emission Factor (lbs/ton)	Potential Emission Rate (lbs/yr)	Emission Factor (lb/1000 gallon)	Potential Emission Rate (lbs/yr)	Oper. Scen. Emissions (lbs/yr)	Maximum Emissions (lbs)	Maximum Emissions (tons)
Benzene[2]	2.90E-03	368.36	2.90E-03	368.36	2.75E-03	3.68	372.04	2.90E-03	368.36	2.14E-04	0.08	3.68E+02	**372.04**	0.19
Nickel[1]	7.20E-05	9.15	7.20E-05	9.15	4.20E-04	0.56	9.71	7.20E-05	9.15	8.45E-02	30.00	3.91E+01	**39.14**	0.02
Hydrogen Chloride[3a]	9.9E-03	1,260.50	9.9E-03	1,260.50	N/A	0.00	1,260.50	9.9E-03	1,260.50	N/A	0.00	1.26E+03	**1,260.50**	0.63
Hydrogen Fluoride[3a]	1.6E-02	1,997.41	1.6E-02	1,997.41	N/A	0.00	1,997.41	1.6E-02	1,997.41	N/A	0.00	2.00E+03	**1,997.41**	1.00

1. Clay Firing particulate emission factors based on Stack Test dated March 2006. Also it was assumed that PM=PM10=PM2.5
2. Clay Firing emission factor based on USEPA/Brick Association of North Carolina sponsored source test completed at Triangle Brick Company's Merry Oaks, North Carolina facility.
3. Chromium IV distillate and residual fuel emission rates are based on AP-42 Chromium VI emission factor in AP-42 Section 1.3 "Fuel Oil Combustion," Table 1.3-11.
4a. Uncontrolled emission factor for Hydrogen Chloride based on AP-42 Section 11.3 "Brick and Structural Clay Products," Final Report 1997.
4b. Uncontrolled emission factor for Hydrogen Fluoride based on source test completed October 1995.
4c. Controlled emission factor for Hydrogen Fluoride and Hydrogen Chloride based on source re-test completed February 2017. In the interest of conservatism, the emission factor is twice the tested value.
5. Emission factor for Total Fluorides is (1.6) x (Hydrogen Fluoride emission factor). The formula used is based on the guidance in AP-42 Section 11.3 "Brick and Structure Clay Products," Table 11.3-4 Footnote F.
6. Emission factors obtained from AP-42 Section 11.3 "Brick and Structural Clay Products", Final report, August 1997 (unless otherwise noted).
7. Emission factors are obtained from NC DEQ Emission Estimation Spreadsheet for fuel oil combustion (unless otherwise noted).
8. Heat input rating assumed to be 140,000 Btu/gallon for No. 2 fuel oil and 150,000 Btu/gal for No. 6 fuel oil.
9. Sulfur content of No.2 fuel oil assumed to be 0.5%.
10. Sulfur content of No.6 fuel oil assumed to be 2.1%.